

Replace the abstract beginning on page 13 as follows:

PROCESS FOR DESULFURIZATION OF EXHAUST GAS WITH SEAWATER

A6  
A method for removing an acidic component such as sulfite gas (SO<sub>2</sub>) contained in an exhaust gas comprising by using a system comprising (a) a gas-liquid contact apparatus composed of an absorption column provided internally with at least one perforated plate at the top, bottom, or both top and bottom of the absorption column packed with at least one type of fillers, (b) an apparatus for introducing raw seawater to the absorption column, (c) an apparatus for oxidizing the seawater after gas-liquid contact, and (d) an apparatus for mixing raw seawater with the contact seawater after oxidation, whereby the exhaust gas containing an acidic component is brought into gas-liquid contact with the seawater.

IN THE CLAIMS:

Please amend claims 1 and 2 as follows:

- a7
1. (Amended) A method for removing an acidic component contained in an exhaust gas comprising:
- (a) introducing raw seawater into a gas-liquid contact apparatus composed of an absorption column provided internally with at least one perforated plate at the top, bottom, or both top and bottom of the absorption column packed with at least one type of fillers to thereby effect an exhaust gas-seawater counter current contact treatment,
  - (b) oxidizing the seawater after the gas-liquid contact with air in an oxidation apparatus, and
- Sub B1

(c) mixing raw seawater with the seawater after the oxidation, whereby the exhaust gas and the oxidized seawater are discharged.

a1 2. (Amended) A method as claimed in claim 1, whereby the seawater is introduced into a gas-liquid contact apparatus including an absorption column having a column diameter of at least 500 mm and provided with at least one perforated plate having an free-space ratio  $F_c$  of 0.25 to 0.5 and packed with at least one type of packing material to a packing height of 0.5 m to 4 m, in such an amount that a ratio  $L/G$  of the flow rate  $L$  ( $\text{kg}/\text{m}^2 \cdot \text{hr}$ ) of the seawater to the flow rate  $G$  ( $\text{kg}/\text{m}^2 \cdot \text{hr}$ ) of the gas to be treated from the top of the column is at least 3.6 and a flow rate  $L$  of the seawater is  $1 \times 10^4$  to  $25 \times 10^4 \text{ kg}/\text{m}^2 \cdot \text{hr}$  and introducing a treated gas in such an amount that a range of a superficial gas velocity  $U_g$  in the apparatus from the bottom of the gas-liquid contact apparatus is less than  $2 U_{gm}$  (m/sec):

$$U_{gm} = 49.14 F_c^{0.7} (\rho_G / \rho_L \times 10^{-3})^{-0.5} \cdot (L/G)^{-1/3} \cdot \sqrt{g \cdot L}$$

wherein  $L$  is a capillary constant  $\sqrt{2\sigma / \rho_L \cdot g}$ ,

$g$  is a gravitational acceleration ( $\text{m}/\text{sec}^2$ ), and

$\sigma$  is a surface tension of seawater ( $\text{kg}/\text{sec}^2$ )

in the case of using a perforated or grid plate column without weir and downcomer composed of at least one perforated plate and the ratio  $\rho_G / \rho_L$  of the density  $\rho_G$  ( $\text{kg}/\text{m}^3$ ) of the treated gas to the density  $\rho_L$  ( $\text{kg}/\text{m}^3$ ) of seawater is at least  $0.838 \times 10^{-3}$ .

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Please add new claims 3 and 4 as follows:

3. An apparatus for removing an acidic component contained in an exhaust has comprising:

(a) a gas-liquid contact apparatus composed of an absorption column provided internally with at least one perforated plate at the top, bottom, or both top and bottom of the absorption column packed with at least one type of fillers, in which the exhaust gas is contacted with seawater,

(b) an apparatus for oxidizing seawater after the gas-liquid contact with air, and

(c) an apparatus for mixing raw seawater with the seawater after the oxidation.

08 4. An apparatus as claimed in claim 3, wherein the gas-liquid contact apparatus comprises an absorption column having a column diameter of at least 500 mm, which is provided with at least one perforated plate having a free-space ratio  $F_c$  of 0.25 to 0.5 and provided with at least one type of packing material with a packing height of 0.5 m to 4 m, in which the seawater is introduced in such an amount that a ratio  $L/G$  of the flow rate  $L$  ( $\text{kg}/\text{m}^2 \cdot \text{hr}$ ) of the seawater to the flow rate  $G$  ( $\text{kg}/\text{m}^2 \cdot \text{hr}$ ) of the gas to be treated from the top of the column is at least 3.6 and a flow rate  $L$  of the seawater is  $1 \times 10^4$  to  $25 \times 10^4 \text{ kg}/\text{M}^2 \cdot \text{hr}$  and introducing a treated gas in such an amount that a range of a superficial gas velocity  $U_g$  in the apparatus from the bottom of the gas-liquid contact apparatus is 0 to  $2 \cdot U_{gm}$  (m/sec):

$$U_{gm} = 49.14 F_c^{0.7} (\rho_g/\rho_L \times 10^{-3})^{-0.5} \cdot (L/G)^{-1.5} \sqrt{g \cdot L}$$

wherein  $L$  is a capillary constant  $\sqrt{2\sigma/\rho_L \cdot g}$ ,